

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 9, 2018

MEMO TO: Steven Stokes, Technical Director
FROM: Ramsey Arnold and Zachery Beauvais, Pantex Plant Resident Inspectors
SUBJECT: Pantex Plant Report for Week Ending February 9, 2018

DNFSB Staff Activity: J. Anderson observed and evaluated the conclusion of the nuclear explosive safety master study of special tooling and qualified containers.

High Pressure Fire Loop (HPFL): Last week, NPO issued a safety evaluation report approving a justification for continued operations (JCO) that establishes compensatory measures to assure HPFL operability. Multiple HPFL degradations in the loop piping, facility lead-in piping, and valves led to longer one-way feeds to facilities than expected, potentially beyond the capabilities of the system to provide the necessary water flowrate and pressure to specific facilities. Due to the degraded HPFL configuration, Pantex declared a potential inadequacy of the safety analysis (PISA) and positive unreviewed safety question (USQ) in October (see 10/27/17 report). After initial operational restrictions were put in place following the PISA, CNS subsequently modified the restrictions three times, in part due to NPO and resident inspector comments. CNS submitted three versions of the JCO to address the inadequate quality of the submittals and the basis for the proposed compensatory measures, as identified in the NPO responses and comments. The approved JCO compensatory measures require that all three fire pump/tank configurations are operable and that three of five defined HPFL interconnects remain open. The HPFL limiting condition for operability was revised and fully included in the JCO and a standing order. The JCO also requires CNS maintenance personnel to physically verify that all HPFL valves within the interconnects remain open. Due to an HPFL rupture in December that included a portion of one HPFL interconnect, Pantex is currently down to four operable interconnects (see 12/14/17 report). The resident inspectors attended the standing order training provided to fire protection engineers and CNS facility representatives. Once the standing order is published, the readiness assurance department will complete an implementation verification review of the JCO. In conjunction with the first JCO submittal, CNS completed an engineering evaluation that utilized a software tool to justify operability with only two pump/tank configurations. The software is maintained in the software quality assurance (SQA) program, however, some model inputs used in the latest analysis were not previously validated. Based on the small margin between the calculated and required system pressure, and additional factors that introduced potential errors or uncertainty (e.g., material properties and pump curves), CNS will need to review and potentially update the SQA test plan.

Weapon Response: Pantex declared a PISA on one weapon program when they discovered a discrepancy between two design agency (DA) weapon response rules and the hazard analysis report (HAR) in several accident scenarios that postulate a mechanical release of nuclear material during cell operations. The HAR currently utilizes an incorrect, but unscreened weapon response for these scenarios. Because the DA weapon responses have a higher frequency than what was included in the HAR, a PISA was declared. The HAR currently analyzes these scenarios and credits personnel evacuation as a specific administrative control to mitigate consequences to the facility worker. The discrepancy was identified during a CNS quality review prior to re-submitting a previously rejected annual update change package. While a portion of the operations on this weapon program already went through a HAR upgrade initiative (see 2/28/14 report), cell operations were de-scoped from that effort.